

Rapid Watershed Assessment

Elk-Nokasippi **(MN) HUC: 07010104**



Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

Introduction

The Elk-Nokasippi 8-Digit Hydrologic Unit Code (HUC) subbasin is located in the Northern Lakes and Forest ecoregion of Minnesota. This predominantly forested watershed is 1,079,950 acres in size. Approximately seventy six percent of the land in this HUC is privately owned, and the remainder is largely tribal, state, county or federally owned land.

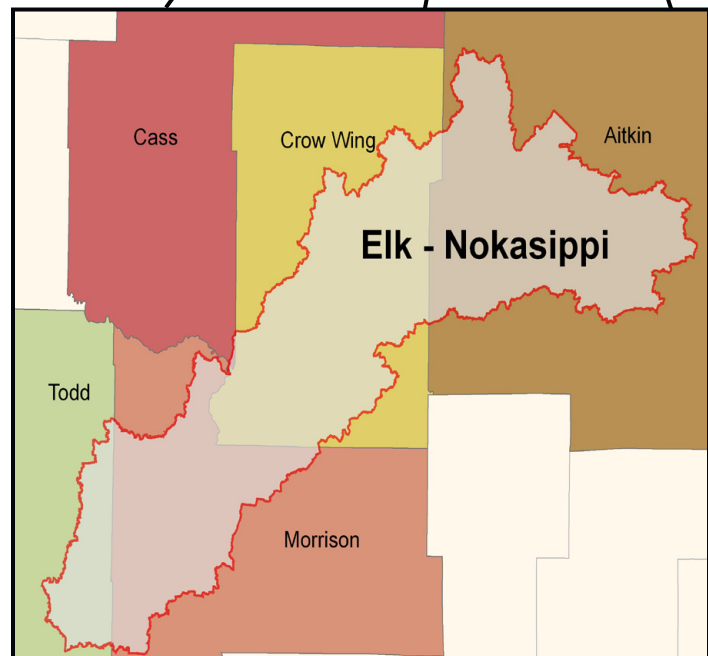
Assessment estimates indicate 1,455 farms located in the watershed. Approximately fifty eight percent of the operations are less than 180 acres in size, forty percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size. Fifty nine percent of the producers are full time operators not reliant on off-farm income.

The main resource concerns in the basin are excessive soil erosion, woodland management, surfacewater quality, groundwater quality and quantity, surfacewater management, wetland management, and riparian development issues. Associated with the erosion issues and riparian development are increased sediment and pollutant (mercury, excess nutrients) loadings to surface waters. Declining wildlife habitat is also a concern.



County Totals

County	Acres in HUC	% HUC
Cass	1,032	0.1%
Aitkin	379,848	35.2%
Crow Wing	368,626	34.1%
Todd	81,372	7.5%
Morrison	249,073	23.1%
Total acres:	1,079,950	100%



Physical Description

Average elevation in the Elk-Nokasippi subbasin is 1,210 feet above sea level, with the highest values being in the Southeastern and Northwestern portions of the watershed, while lower values are found across the Southwestern, central and northern regions.

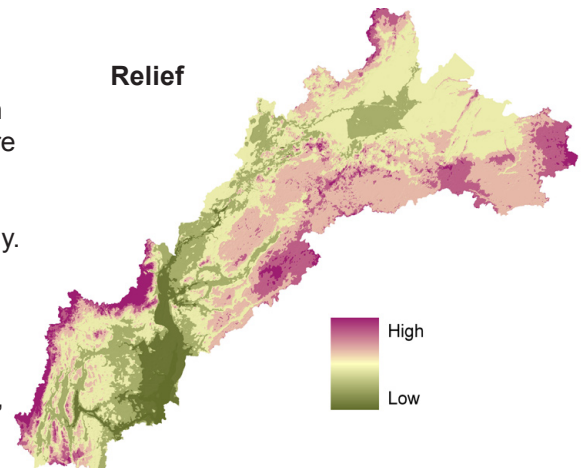
Precipitation in the watershed ranges from 25 to 29 inches annually. Evaporation estimates are between 32 to 34 inches annually (Farnworth et al., 1982, Minnesota State Climatologists Office, 1999).

Much of the land within this HUC is not considered highly erodible, and is moderately suited to agricultural uses. Predominate land uses / land covers are Forest (42%), Grass Pasture/Hay (19.5%), Wetlands (17.1%), Row Crops (10%) and Open Water (5.7%).

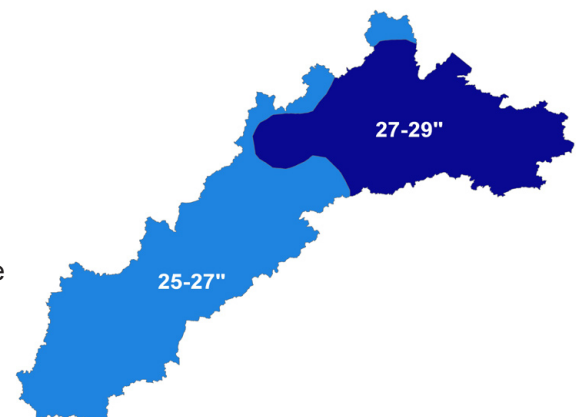
Land use within the watershed is moderately agricultural, accounting for approximately 30% of the available acres. Development pressure is moderate to high in many areas, with considerable farms, timberland and lakeshore being parceled out for recreation, lake or country homes.

According to the Minnesota DNR, the Brainerd lakes area is one of the nation's fastest growing micropolitan areas (fourth fastest growing mini-metro area in the Midwest and 28th nationally). There is widespread concern that population growth, rapid development along lakeshores, and the transition to larger, year-round homes will adversely impact water quality and fish and wildlife habitat.

Relief

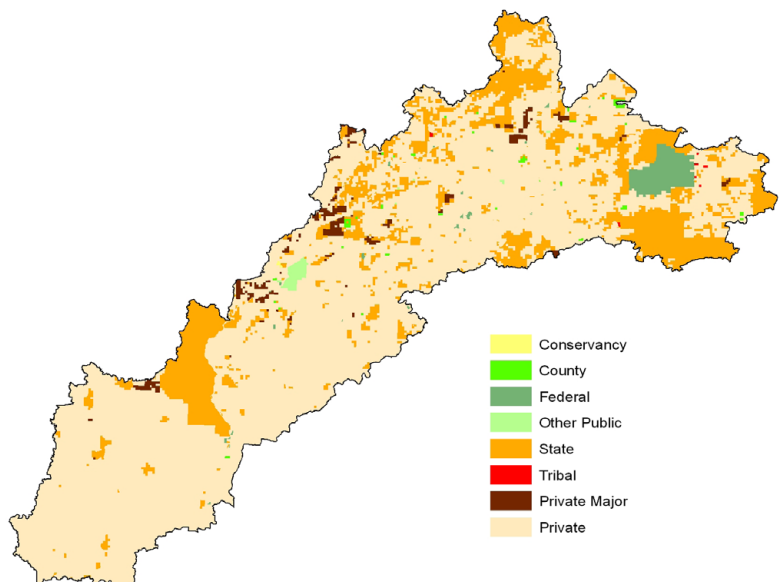


Average Precipitation



Ownership

Ownership Type*	Acres	% of HUC
Conservancy	200	0.02
County	3,154	0.29
Federal	19,392	1.80
State	219,145	20.29
Other	4,227	0.39
Private Major	16,654	1.54
Private	816,718	75.63
Tribal	460	0.04
Total Acres:	1,079,950	100

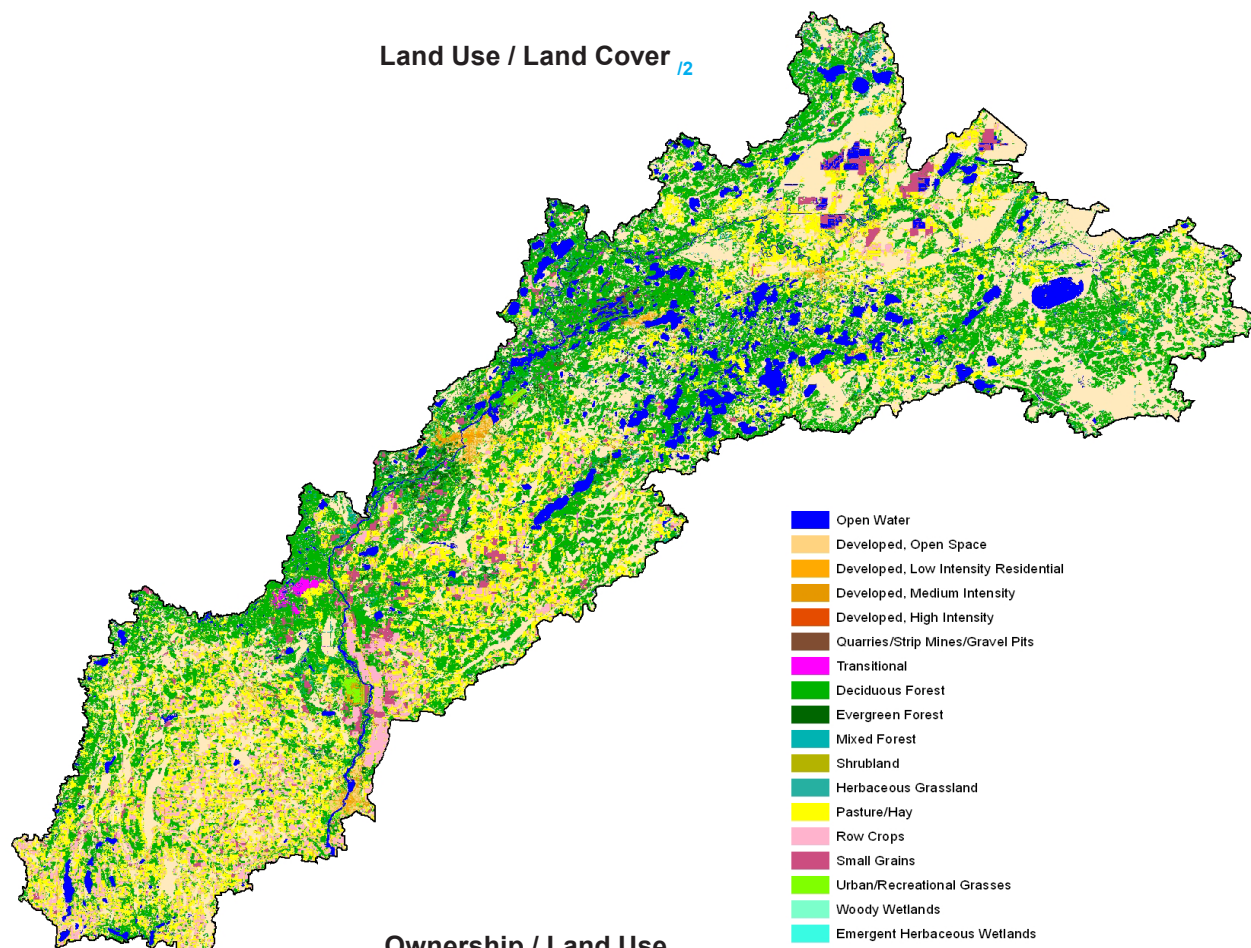


* Ownership totals derived from 2007 MN DNR GAP Stewardship Coverage data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Ownership / Land Use

The Elk-Nokasippi watershed covers an area of 1,079,950 acres. Slightly more than seventy five percent of the land in the watershed is owned by private landholders (816,718 acres). The second largest ownership type is State, with approximately 219,150 acres (20%), followed by Federal with approximately 19,400 acres (1.8%), Private-Major with 16,650 acres (1.6%), County with 3,150 acres (0.3%) and Tribal with 460 acres (0.04%). There are an additional 4,200 acres of miscellaneous public lands, and 200 acres of conservancy land holdings in the basin. Land use by ownership type is represented in the table below.

Land Use / Land Cover ^{/2}



Ownership / Land Use ^{/3}

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	136,883	12.7%	315,940	29.3%	334	0.0%	453,158	42.0%
Grass, etc	13,071	1.2%	197,586	18.3%	52	0.0%	210,708	19.5%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	6,275	0.6%	101,836	9.4%	0	0.0%	108,111	10.0%
Shrub etc	5,569	0.5%	8,797	0.8%	0	0.0%	14,366	1.3%
Wetlands	67,386	6.2%	116,731	10.8%	59	0.0%	184,176	17.1%
Residential/Commercial	7,400	0.7%	40,082	3.7%	15	0.0%	47,497	4.4%
Open Water*	9,168	0.8%	52,763	4.9%	0	0.0%	61,931	5.7%

* ownership undetermined

** includes private-major

Watershed Totals:	245,751	22.76%	833,737	77.2%	460	0.0%	1,079,950	100%
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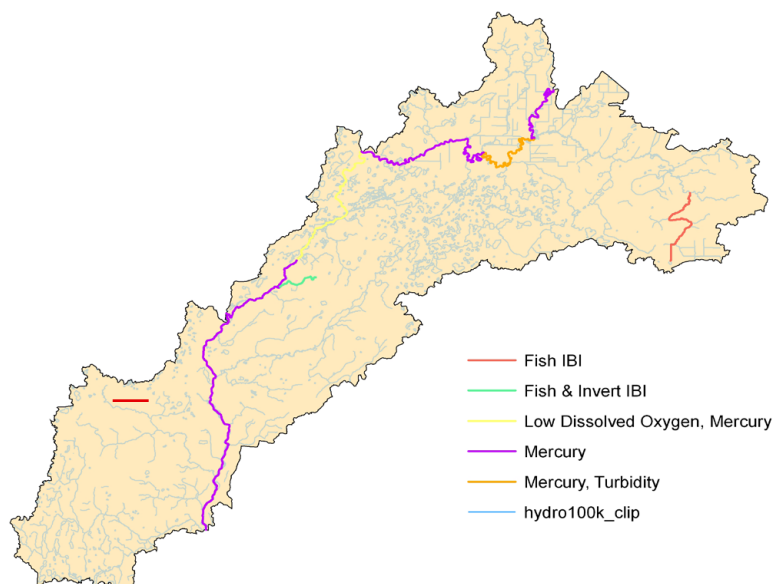
Physical Description (continued)

		ACRES	cu. ft/sec	
Stream Flow Data	USGS 05227500 MISSISSIPPI RIVER AT AITKIN, MN	Total Avg.	58.1	
		May – Sept. Avg. Yield	1906.6	
Stream Data ¹⁴ (*Percent of Total HUC Stream Miles)		ACRES/MILES	PERCENT	
	Total Miles – Major (100K Hydro GIS Layer)	2,149.2	---	
	2006 303d/TMDL Listed Streams	136.4	6.35%	
Riparian Land Cover/Land Use ¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Land Use Type	Acres	Percent	
	Forest	16,901	32.8%	
	Grain Crops	0	0.0%	
	Grass, etc	5,186	10.1%	
	Orchards	0	0.0%	
	Row Crops	3,205	6.2%	
	Shrub etc	387	0.8%	
	Wetlands	12,772	24.8%	
	Residential/Commercial	1,309	2.5%	
	Open Water*	11,803	22.9%	
	Total Buffer Acres:	51,563	100%	
	Crop and Pastureland Land Capability Class ¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	0	0%
2 – moderate limitations		110,100	31%	
3 – severe limitations		95,300	27%	
4 – very severe limitations		69,500	20%	
5 – no erosion hazard, but other limitations		2,600	1%	
6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest		53,400	15%	
7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat		20,500	6%	
8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply		0	0%	
Total Croplands & Pasturelands		351,400	---	
	TYPE OF LAND	ACRES	% of Irrigated Lands	% of Cropland
Irrigated Lands ¹⁷ (1997 NRI Estimates for Non-Federal Lands Only)	Cultivated Cropland / Pastureland	19,600	100%	6%
	Uncultivated Cropland	0	0%	0%
	Total Irrigated Lands	19,600	---	6%

Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies with impaired use(s) must be placed on a state's impaired waters list. A water body is "Impaired" or polluted when it fails to meet one or more of the Federal Clean Water Act's water quality standards. Federal Standards exist for basic pollutants such as sediment, bacteria, nutrients, and mercury. The Clean Water Act requires the Minnesota Pollution Control Agency (MPCA) to identify and restore impaired waters.

2006 Minnesota 303d Listed Streams - Elk-Nokasippi Watershed



Listed Stream / Reach ^{/8}		Impairment	Affected Use
Mississippi River	Sandy R to Willow R	Mercury, Turbidity	Aquatic Consumption and Aquatic Life
Mississippi River	Pine R to Brainerd Dam	Low Dissolved Oxygen, Mercury	Aquatic Consumption and Aquatic Life
Mississippi River	Rice R to Little Willow R	Mercury, Turbidity	Aquatic Consumption and Aquatic Life
Rice River	Headwaters (Porcupine Lk) to Section 5 Cr	Fish IBI	Aquatic Life
Mississippi River	End HUC 07010103 below Willow R to Rice R	Mercury	Aquatic Consumption
Mississippi River	Fletcher Cr to Little Elk R	Mercury	Aquatic Consumption
Mississippi River	Crow Wing R to Nokasippi R	Mercury	Aquatic Consumption
Mississippi River	Brainerd Dam to Crow Wing R	Mercury	Aquatic Consumption
Mississippi River	Little Willow R to Pine R	Mercury	Aquatic Consumption
Mississippi River	Little Falls Dam to Swan R	Mercury	Aquatic Consumption
Mississippi River	Little Elk R to Little Falls Dam	Mercury	Aquatic Consumption
Buffalo Creek	Headwaters to Mississippi R	Fish IBI	Aquatic Life
Mississippi River	Nokasippi R to Crow Wing/Morrison Co border	Mercury	Aquatic Consumption
Mississippi River	Crow Wing/Morrison Co border to Fletcher Cr	Mercury	Aquatic Consumption
Crow Wing River	Gull R to Mississippi R	Mercury	Aquatic Consumption
Mississippi River	End HUC 07010104 below Swan R to Two R	Mercury	Aquatic Consumption

Assessment of Waters (continued)

2006 Minnesota 303d Listed Lakes - Elk-Nokasippi Watershed



Listed Lake	Impairment	Affected Use
Clear	Mercury	Aquatic Consumption
Dam	Mercury	Aquatic Consumption
Gun	Mercury	Aquatic Consumption
Waukenabo	Mercury	Aquatic Consumption
Esquagamah	Mercury	Aquatic Consumption
Farm Island	Mercury	Aquatic Consumption
Hanging Kettle	Mercury	Aquatic Consumption
Pickerel	Mercury	Aquatic Consumption
Cedar	Mercury	Aquatic Consumption
Bay	Mercury	Aquatic Consumption
Rabbit (East Portion)	Mercury	Aquatic Consumption
Rabbit (West Portion)	Mercury	Aquatic Consumption
Black Hoof	Mercury	Aquatic Consumption
Rice	Mercury	Aquatic Consumption
Big Swan	Mercury	Aquatic Consumption

Common Resource Areas

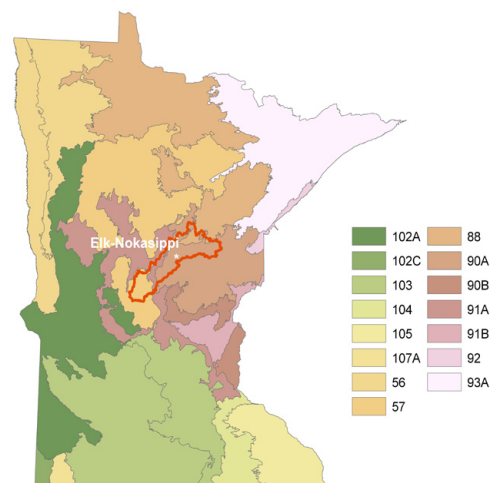
The Elk-Nokasippi Watershed encompasses four common resource areas, CRA 91A.1 and 90A.1, 88.1, and 57.1 ^{/9}

91A.1 Central Minnesota Outwash: Nearly level to gently sloping well drained sandy soils on outwash plains and stream terraces. There are also numerous poorly and very poorly drained mineral and organic soils. Irrigated crop land, pasture and hayland are the major land uses. Forestland is common in parts. Corn, soybeans, edible beans and potatoes are the primary irrigated crops. Forage crops are also extensively grown. Resource concerns are wind erosion water quality, nutrient management, improperly managed grazing.

90A.1 Loamy Till Ground Moraines and Drumlins: Nearly level to moderately steep, loamy, sandy, and organic soils. Mixed deciduous and coniferous forest is the primary land use with some glacial lakes and wetlands. Scattered cropland and grazing land are present. Cropland productivity is limited by the short length of the growing season. Primary resource concerns are timber management, wildlife habitat, recreation and agricultural forage production. Surface water quality is a localized concern.

88.1 Northern Minnesota Glacial Lake Basins: Nearly level to gently sloping areas formed in lake washed till, lacustrine and organic soil material. Generally the soils are silty, clayey and loamy with small amounts of sandy and gravelly soils on beach ridges. Timber land is the main use. Scattered cropland and grazing land for beef and dairy are present. Cropland is used mostly for small grain, silage and hay. Resource concerns include management of excessive wetness, short growing season, pasture management, and water quality.

57.1 Northern Minnesota Till Moraine: Rolling glacial moraine and associated outwash with short, choppy and complex slopes. Soils are generally loamy with some clayey and sandy soils included. Organic soils occur in depressions. Land use is cropland, pasture timber and recreation. Numerous lakes occur in this region. Main crops are small grain, soybeans and forage crops. Resource concerns include improved drainage for crop production, grazing management of forest and grassland, water and winderosion and water quality impacts.



Only the major CRA units are described above.

 For further information, go to:

<http://soils.usda.gov/survey/geography/cra.html>

Geology / Soils ^{/10}

Bedrock geology in the watershed the consists of primarily Precambrian crystalline rocks (Sims and Morey, 1972, Stark et al, 1996). The Elk-Nokasippi Watershed lies within the siliceous glacial deposits associated with the Superior Lobe and Rainy Lobe Associations.

The bedrock hydrogeology and ground water in the Elk-Nokasippi Watershed consists of primarily Precambrian igneous and metamorphic rocks.

The surfacial aquifers are glacial outwash consisting of course-grained sands and fine-grained alluvium of calcareous and siliceous deposits. The glacial till consists of calcareous and siliceous deposits. In some areas of the watershed these glacial deposits of sand and gravel are up to 600 feet deep.

Visit the online Web Soil Survey at

<http://websoilsurvey.nrcs.usda.gov> for official and

 current USDA soil information as viewable maps and

 tables. Visit the Soil Data Mart at

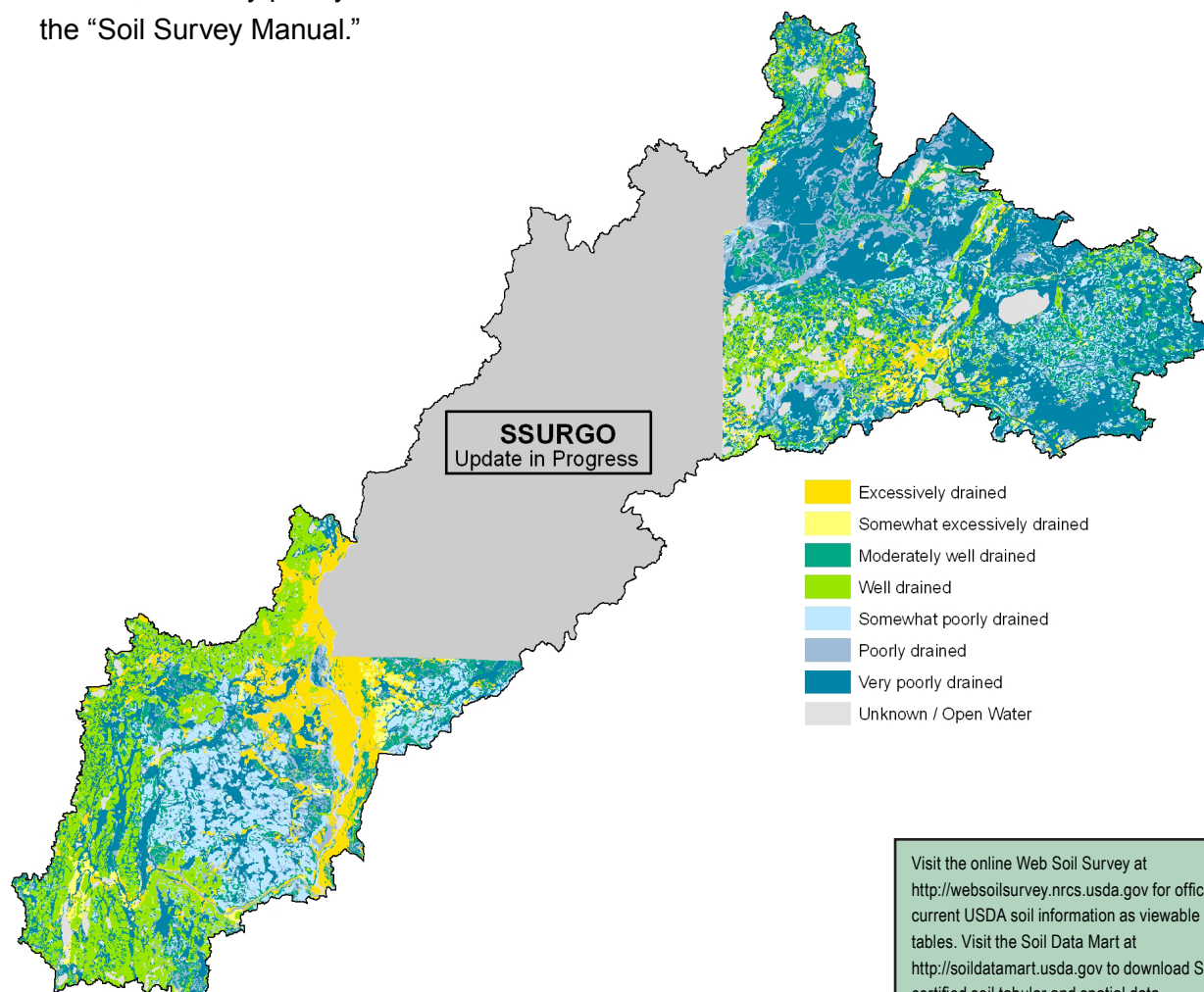
<http://soildatamart.usda.gov> to download SSURGO

 certified soil tabular and spatial data.

Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the “Soil Survey Manual.”

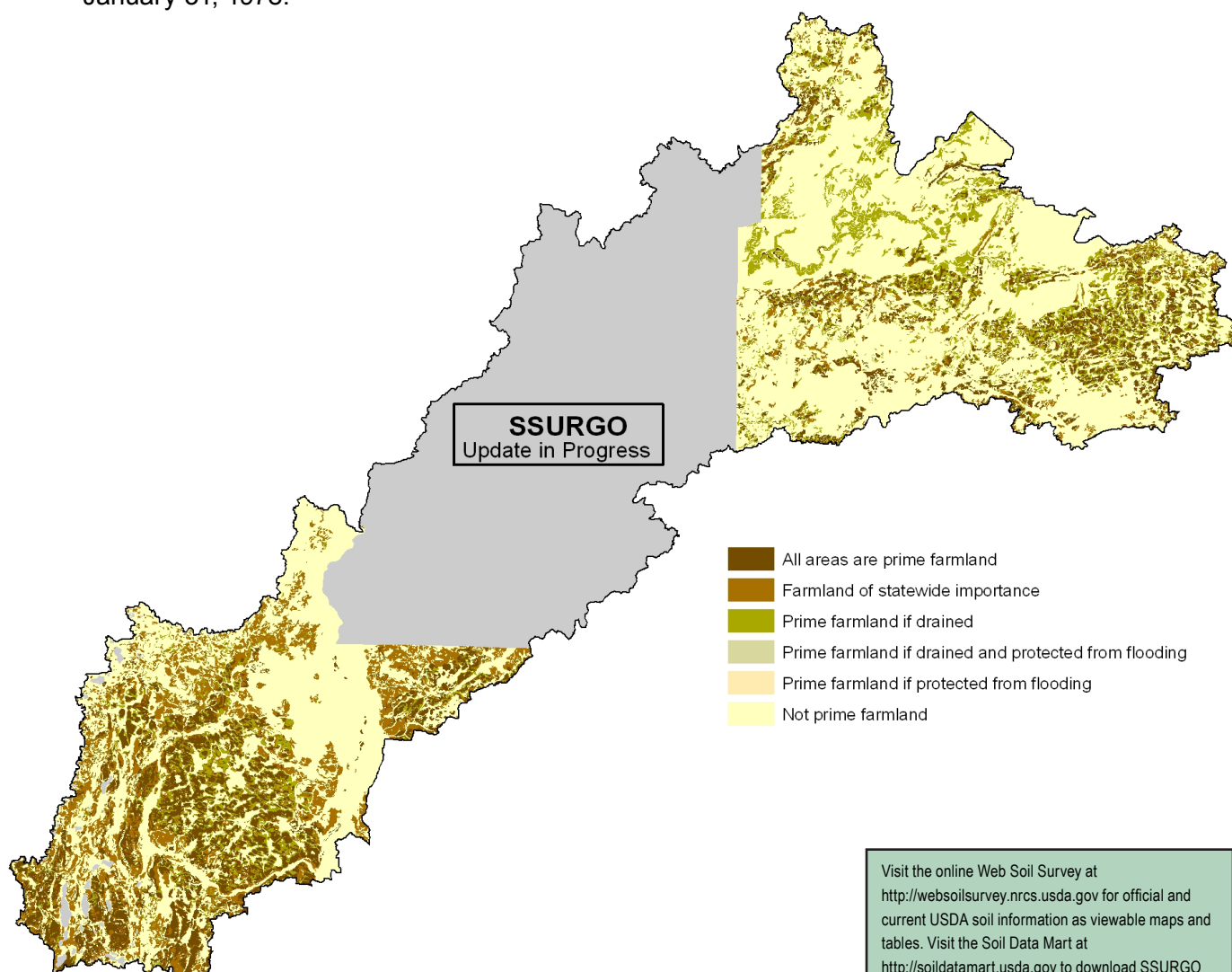


Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland.

Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



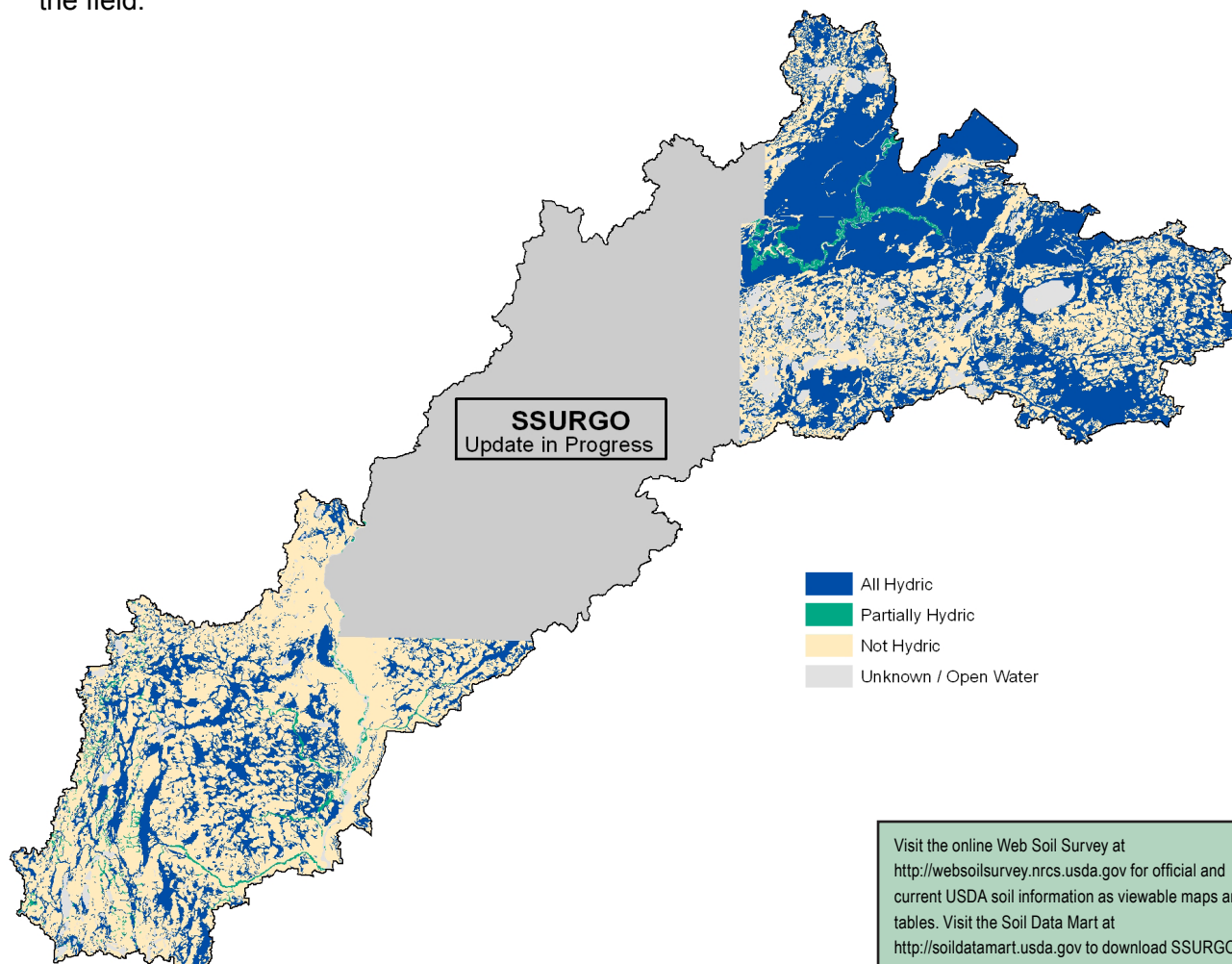
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Hydric Soils

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of nonhydric soils in the higher positions on the landform. Map units of dominantly non-hydric soils may therefore have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

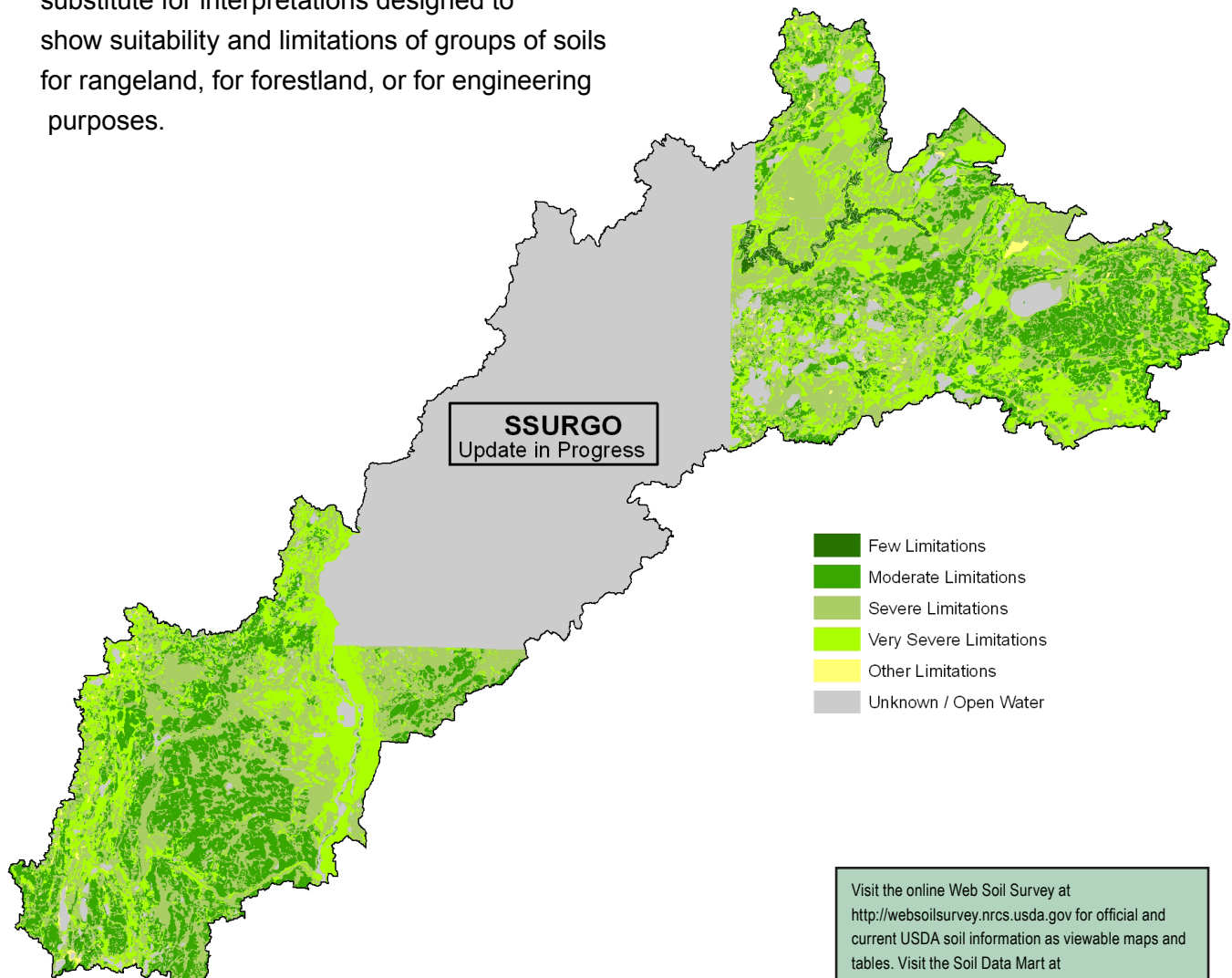
If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field.



Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management.

The criteria used in grouping the soils does not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



Visit the online Web Soil Survey at
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Performance Results System Data

Watershed Name: Elk-Nokasippi				Watershed Number: 7010104						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	2,197	16,996	0	5,664	7,722	N/A	3,937	5,983	8,038	50,537
Total Conservation Systems Applied (acres)	1,495	6,527	0	5,565	5,565	N/A	1,810	6,065	5,594	32,621
Conservation Practices										
Total Waste Management (313) (numbers)	1	2	0	0	2	0	0	0	0	5
Riparian Forest Buffers (391) (acres)	0	57	106	466	271	142	4	76	0	1,122
Erosion Control Total Soil Saved (tons/year)	554	16,072	5,344	6,278	9,024	N/A	N/A	N/A	N/A	37,272
Total Nutrient Management (590) (Acres)	420	2,459	906	1,020	1,574	252	1,586	1,586	450	10,253
Pest Management Systems Applied (595A) (Acres)	0	0	0	472	267	0	0	57	0	796
Prescribed Grazing 528a (acres)	0	2,259	1,308	327	808	183	284	0	0	5,169
Tree & Shrub Establishment (612) (acres)	140	350	180	409	318	150	5	109	53	1,714
Residue Management (329A-C) (acres)	237	1,171	940	160	761	1,062	1,062	3,452	1,183	10,028
Total Wildlife Habitat (644 - 645) (acres)	1,489	1,369	1,758	2,307	1,651	74	2,307	456	907	12,318
Total Wetlands Created, Restored, or Enhanced (acres)	0	118	111	33	31	0	0	18	0	311
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	375	5,283	4,874	1,861	1,055	N/A	25	275	119	13,867
Wetlands Reserve Program	0	0	0	0	0	N/A	0	0	0	0
Environmental Quality Incentives Program	0	5,715	5,482	1,036	827	N/A	1,694	4,918	4,545	24,217
Wildlife Habitat Incentive Program	160	4,778	3,252	20	21	N/A	0	129	44	8,404
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

THREATENED AND ENDANGERED SPECIES ¹⁴

NRCS assists in the conservation of threatened and endangered species and avoids or prevents activities detrimental to such species. NRCS' concern for these species includes the species listed by the Secretary of the Interior (as published in the Federal Register) and species designated by state agencies. The following is a list of threatened, endangered and candidate species as well as species of special concern that occur in the subbasin.



Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Acipenser fulvescens</i>	Lake Sturgeon	Zoological	<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological
<i>Actinonaias ligamentina</i>	Mucket	Zoological	<i>Etheostoma microperca</i>	Least Darter	Zoological
<i>Agapetus toms</i>	A Caddisfly	Zoological	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Zoological	<i>Hemidactylium scutatum</i>	Four-toed Salamander	Zoological
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	Zoological	<i>Heterodon nasicus</i>	Western Hognose Snake	Zoological
<i>Asio flammeus</i>	Short-eared Owl	Zoological	<i>Juglans cinerea</i>	Butternut	Botanical
<i>Besseyia bullii</i>	Kitten-tails	Botanical	<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Botrychium campestre</i>	Prairie Moonwort	Botanical	<i>Ligumia recta</i>	Black Sandshell	Zoological
<i>Botrychium lanceolatum</i>	Triangle Moonwort	Botanical	<i>Littorella uniflora</i>	American Shore-plantain	Botanical
<i>Botrychium mormo</i>	Goblin Fern	Botanical	<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	White Adder's-mouth	Botanical
<i>Botrychium oneidense</i>	Blunt-lobed Grapefern	Botanical	<i>Marpissa grata</i>	A Jumping Spider	Zoological
<i>Botrychium pallidum</i>	Pale Moonwort	Botanical	<i>Microtus ochrogaster</i>	Prairie Vole	Zoological
<i>Botrychium rugulosum</i>	St. Lawrence Grapefern	Botanical	<i>Najas gracillima</i>	Thread-like Naiad	Botanical
<i>Botrychium simplex</i>	Least Moonwort	Botanical	<i>Notropis anogenus</i>	Pugnose Shiner	Zoological
<i>Buteo lineatus</i>	Red-shouldered Hawk	Zoological	<i>Panax quinquefolius</i>	American Ginseng	Botanical
<i>Carex obtusata</i>	Blunt Sedge	Botanical	<i>Phalaropus tricolor</i>	Wilson's Phalarope	Zoological
<i>Cicindela patruela patruela</i>	Northern Barrens Tiger Beetle	Zoological	<i>Poa paludigena</i>	Bog Bluegrass	Botanical
<i>Cirsium hillii</i>	Hill's Thistle	Botanical	<i>Potamogeton bicipulatus</i>	Snailseed Pondweed	Botanical
<i>Coturnicops noveboracensis</i>	Yellow Rail	Zoological	<i>Potamogeton vaseyi</i>	Vasey's Pondweed	Botanical
<i>Cygnus buccinator</i>	Trumpeter Swan	Zoological	<i>Silene drummondii</i>	Drummond's Campion	Botanical
<i>Dendroica cerulea</i>	Cerulean Warbler	Zoological	<i>Utricularia purpurea</i>	Purple-flowered Bladderwort	Botanical
<i>Eleocharis olivacea</i>	Olivaceous Spike-rush	Botanical	<i>Wilsonia citrina</i>	Hooded Warbler	Zoological

RESOURCE CONCERNS

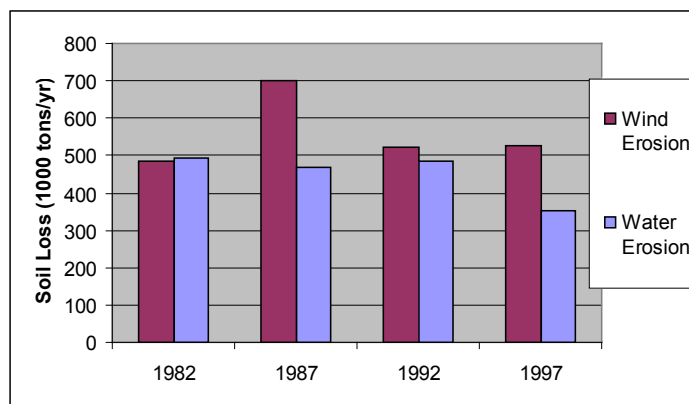
County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

- Soil Quality, Excessive Gully and Sheet and Rill Erosion.** Agricultural runoff and sedimentation caused by the clearing and grading of shoreland property is neither desirable nor necessary. Erosion issues relate directly to lake pollution/eutrophication and shoreland development, and compound effects of erosion from agricultural lands.
- Woodland Management.** Management opportunities include planting trees or shrubs, restoring prairies and savannas, timber stand improvement, timber sales, enhancing wildlife habitat, prescribed burning, and the control of invasive woodland species.
- Surface Water Quality, Nutrients, Priority Pollutants.** Reduction of priority pollutants and sediments in surface waters is a priority issue throughout the watershed. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing a fish community with depressed populations and limited diversity. Mercury levels are affecting the health of Aquatic communities, and affecting the consumption of fish in many area lakes.
- Ground Water Quality, Nutrients, Organics, Animal and Human Wastewater management.** Aging septic systems, feedlot runoff, nutrient runoff, tilling practices, improper closure of old manure pits, and abandoned wells all pose threats to groundwater quality throughout the region. Improved management of wastewater ensures safe water for all uses.
- Ground Water Quantity.** Land alterations have transformed the flow, retention, and replenishment of the hydrologic cycle. Pattern tiling, ditching, wetland removal, development, stormwater drainage, excessive groundwater use, etc. have resulted in the cumulative effect of rapidly transporting a greater amount of water to major rivers and streams, and away from groundwater recharge potential.
- Stormwater Management.** Local districts recognize that runoff volume will likely increase as development of the watershed continues. Districts seek to require that peak runoff rates be kept below the capacity of downstream conveyance facilities through the use of retention facilities.
- Wetland Management, Surface Water Management, Gully Control.** Drained wetlands, crop production in flood prone areas, and aging dams all diminish surface water quality and productivity. Restoration and enhancement of wetlands, dam and drainage system repair, and removing flood-prone lands from production all serve to lessen the impact of flooding, improve drainage, and improve the vitality of existing wetlands



NRI Erosion Estimates

- Sheet and rill erosion by water on the cropland and pastureland have **decreased** by approximately 142,200 tons of soil (28.76%) from 1982 to 1997.
- NRI estimates indicate wind erosion rates have **increased** by 40,700 tons (8.41%) between 1982 and 1997.¹³



Socioeconomic and Agricultural Data (Relevant)

Estimations for the Elk-Nokasippi subbasin indicate a current population of approximately 60,139 people. Median household income throughout the district is near \$36,200 yearly, roughly 78% of the national average. Unemployment estimates for the basin show a rate of 5.5%, and approximately 12% of the residents in the watershed are below the national poverty level.



Assessment estimates indicate 1,455 farms located in the watershed. Approximately fifty eight percent of the operations are less than 180 acres in size, forty percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

(MN) HUC# 7010104		Total Acres:	1,079,950
Population Data*	Watershed Population	60,139	
	Unemployment Rate	5.5%	
	Median Household Income	36,187	
	% below poverty level	12%	
	Median Value of Home	88,840	
Farm Data	# of Farms	1,455	
	# of Operators	1,450	Percent
	# of Full Time Operators	856	59%
	# of Part Time Operators	594	41%
	Total Cropland Acres	179,437	16.6%
Farm Size	1 to 49 Acres	1	18%
	50 to 179 Acres	2	40%
	180 to 499 Acres	1	33%
	500 to 999 Acres	0	7%
	1,000 Acres or more	0	2%
	Average Farm Size	55	
Livestock & Poultry	Cattle - Beef	11,622	1%
	Cattle - Dairy	11,836	1%
	Chicken	389,567	21%
	Swine	11,165	1%
	Turkey	501,812	27%
	Other	930,133	50%
	Animal Count Total:	1,856,134	
	Total Permitted AFOs:	439	
Chemicals (Acres Applied)	Insecticides	5,088	
	Herbicides	47,375	
	Wormicides	22	
	Fruiticides	1,822	
	Total Acres Treated	54,306	
	% State Chemical Totals	0.4%	

* Adjusted by percent of county in the HUC or by percent of block group area in the HUC, depending on the level of data available

Watershed Projects, Plans and Monitoring

- **Biological & Toxicological Assessment**
Minnesota Pollution Control Agency
 - **Mississippi River Env. Management Program**
US Army Corps of Engineers
 - **Mississippi River Watch**
Mississippi Headwaters Board
 - **Mississippi River Defense Network**
Legislative Commission on Minnesota Resources
 - **Upper Mississippi River Basin W.Q. Plan**
Minnesota Pollution Control Agency
 - **North Central Minnesota Lakes Project**
Minnesota Dept of Natural Resources
 - **Upper Mississippi River Initiative**
National Audubon Society
 - **Upper Mississippi River Basin Planning**
Minnesota Pollution Control Agency
 - **Upper Mississippi Source Water Protection Project**
Minnesota Department of Health
 - **Upper Mississippi River WS Forest Partnership**
USDA Forest Service
 - **Upper Mississippi River Watershed Fund**
USDA Forest Service / National Fish & Wildlife Federation
- * Have a watershed project you'd like to see included?
Submit suggestions online @ <http://www.mn.nrcs.usda.gov/technical/rwa/>

Conservation Districts, Organizations & Partners

- **Aitkin County SWCD**
130 Southgate Dr, Aitkin, MN 56431
Phone (218) 927-6565
- **Brainerd Lakes Area Conservation Collaborative**
Contact: Phil Hunsicker, 1000 Friends of Minnesota
Phone (218) 824-5095
- **Cass County SWCD**
303 Minnesota Avenue W Walker, MN 56484-3000
Phone (218) 547-7399
- **Crow Wing County SWCD**
7118 Clearwater Rd, Baxter, MN 56425
Phone (218) 828-6197
- **Crow Wing Lakes and Rivers Alliance**
7118 Clearwater Road, Baxter, MN
Phone 218 692 3439
- **1000 Friends of Minnesota**
213 South 5th Street Brainerd, MN 56401
Phone (218) 824-5095
- **Friends of the Mississippi River**
360 N Robert St Saint Paul, MN 55101
Phone (651) 222-2193
- **The Initiative Foundation**
405 First Street SE Little Falls, MN 56345
Phone (877) 632-9255
- **Morrison County SWCD**
6776 Heron Rd, Little Falls, MN 56345
Phone (320) 616-2479
- **West Central Minnesota Joint Powers Board**
809 SE 8th St, Detroit Lakes, MN 56501
Phone (218) 847-9392
- **Thirty Lakes Watershed District**
17064 Commercial Park Rd Brainerd, MN 56401
Phone (218) 828-0243
- **Todd County SWCD**
607 9th St NE, Long Prairie, MN 56347
Phone (320) 732-2644

Footnotes / Bibliography

1. Ownership Layer – Source: MN Stewardship Data: Minnesota Department of Natural Resources, Section of Wildlife, BRW, Inc, 2007. This is the complete GAP Stewardship database containing land ownership information for the entire state of Minnesota. Date of source material is variable and ranges from 1976 to 2007, although a date range of 1983 to 1985 predominates. Land interest is expressed only when some organization owns or administers more than 50% of a forty except where DNR could create sub-forty accuracy polygons.
2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Minnesota Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA.
3. Ownership layer classes grouped to calculate Public ownership vs. Private and Tribal ownership by Minnesota NRCS Rapid Watershed Assessment Staff. Land cover / Land use data was then extracted from the National Landcover Dataset Classification System and related to ownership class polygons.
4. USGS 1:100,000 Hydrography Layer .This data set represents all features coded as 'rivers' on the USGS 1:100,000-scale DLG Hydrography data set. This current version was converted to ARC/INFO by the Land Management Information Center and edge-matched across map sheet boundaries. Minnesota DNR made further modifications to the files, verified lake feature identifiers, and created a state layer from the separate 100k data. The Hydro 100k layer was compared to MPCA's 303(d) data to derive percentage of listed waters.
5. Land Cover / Land Use / Hydro 100k Buffer. Using the 100k Hydrology dataset, All streams within HUC were spatially buffered to a distance of 100 ft. National Landcover Dataset attributes were extracted for the spatial buffer to demonstrate the vegetation and landuse in vulnerable areas adjacent to waterways.
6. Land Capability Class. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. 1997 NRI Irrigated Land Estimates. Irrigated land: Land that shows evidence of being irrigated during the year of the inventory or during two or more years out of the last four years. Water is supplied to crops by ditches, pipes, or other conduits. Water spreading is not considered irrigation; it is recorded as a conservation practice. [NRI-97] For more information: <http://www.nrcs.usda.gov/technical/NRI/>
8. 303(d) Stream data. Minnesota's Final Impaired Waters (per Section 303(d) Clean Water Act), 2006. Data obtained from Minnesota Pollution Control Agency (MPCA). The Minnesota Pollution Control Agency (MPCA) helps protect state water by monitoring quality, setting standards and controlling inputs through the development of TMDL plans. <http://www.pca.state.mn.us/water/tmdl/index.html#maps>.

Footnotes / Bibliography (continued)

9. National Coordinated Common Resource Area (CRA) Geographic Database. A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

10. Soil Survey Geographic Database (SSURGO) Tabular and spatial data obtained from NRCS Soil Data Mart at <http://soildatamart.nrcs.gov>. Publication dates vary by county. Component and layer tables were linked to the spatial data via SDV 5.1 and ARCGIS 9.1 to derive the soil classifications presented in these examples. Addendum and publication dates vary by county.

11. Lands removed from production through farm bill programs. County enrollment derived from the following: CRP Acres: www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm (7/30/04). CREP Acres: <http://www.bwsr.state.mn.us/easements/crep/easementssummary.html> (7/31/03). WRP Acres: NRCS (8/16/04). Data were obtained by county and adjusted by percent of HUC in the county.

12. Socioeconomic and Agricultural Census Data were taken from the U.S. Population Census, 2000 and 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from MPCA AFO/CAFO counts provided by county for 2005.

13. 1997 NRI Estimates for sheet and rill erosion (WEQ & USLE). The NRI estimates sheet and rill erosion together using the Universal Soil Loss Equation (USLE). The Revised Universal Soil Loss Equation (RUSLE) was not used in the 1997 NRI. RUSLE was not available for previous inventories, therefore the use of USLE was continued to preserve the trending capacity of the NRI database. Wind erosion is estimated using the Wind Erosion Equation (WEQ). For further information visit <http://www.mn.nrcs.usda.gov/technical/nri/findings/erosion.htm>

14. Federally listed endangered and threatened species counts obtained from NRCS Field Office Technical Guide, Section II, Threatened and Endangered List. <http://www.nrcs.usda.gov/Technical/efotg/>. Essential fish habitat as established by Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended through October 11, 1996 <http://www.nmfs.noaa.gov/sfa/magact/>

15. Watershed Projects, Plans, Monitoring. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>. Additional Information on listed individual projects can be obtained from the noted parties.